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10/826,288

04/19/2004

Chien-Hua Chen

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05/15/2007

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EXAMINER

GHYKA, ALEXANDER G

ART UNIT

PAPER NUMBER

2812

MAIL DATE

DELIVERY MODE

05/15/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/826,288

Applicant(s)

CHEN ET AL.

Examiner

Alexander G. Ghyka

Art Unit

2812

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) 19-42 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

ALEXANDER GHYKA  
PRIMARY EXAMINER

Av 2812  
*Alh Ghyka*

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_.

### DETAILED ACTION

1. The Final Rejection of 5/10/2006 is *withdrawn* in view of Applicants' Appeal Brief. The following new non-Final rejections are made. Applicants' arguments have been considered, but are moot in view of the new grounds of rejection. Claims 1-19 are under consideration

#### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(a) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

3. **Claims 1-8, 11-15, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Speakman (USPN 6503831) in view of Arney et al (US 5,235,187).**

Referring to Figs. 20 and related text, Speakman discloses [Re claim 1] a method of making a microelectromechanical system device comprising : releasing a micromover component 1302, and coating the micromover component with a first self-aligned film; [Re claim 2] wherein the step of coating comprises selectively depositing a coating

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composition only on the micromover component. (see col. 44, lines 23-29) ; [Re claims 3-4 ] wherein the film comprises at least one of a polymer, PMMA and an epoxy photoresist; wherein the polymer is thermoplastic (see col. 44, lines 23-52). The Examiner notes that before being released the micromover cannot function as a MEMS (see col. 44, lines 22-28).

However, Speakman et al fails to disclose expressly coating the micromover component after releasing the micromover component.

Arney et al disclose methods of fabricating integrated self aligned tunneling tips which comprise a micromover. See Figures 1A and 2. Arney et al further disclose coating a piezoelectric film on a beam in order for the beam to be moved. See column 12, lines 10-20. Moreover, Arney et al disclose removal of the oxide leaves a gap between the isolated structure and the underlying substrate to release the support beam 24, wherever relative motion is desired. See column 17, lines 20-30. After the removal of the oxide (the release of the beam) the beam is coated. See column 17, lines 35-45 and lines 65-70.

It would have been obvious, for one of ordinary skill in the art, at the time of the invention, to release the micromover of Speakman et al and then coat the micromover, for its benefit in forming a micromover as discussed by Arney et al. As both references pertain to micromovers in MEMS, a *prima facie* case of obviousness is established. The use of a known method, as discussed by Arney, to form a known structure, as disclosed by Speakman et al is *prima facie* obvious. Moreover, the Examiner notes that selection of any order of performing process steps is *prima facie* obvious. See *In re Burnhaus*, 69 USPQ 330 (CCPA 1946).

[Re claim 5] Speakman also discloses wherein the polymer is thermoset (see col. 31, lines 11-17);

[Re claim 6] wherein coating the micromover component comprises adjusting a coating parameter to control the film thickness; [Re claim 7] wherein adjusting a coating parameter comprises selecting a solid to solvent ratio; [Re claim 8] wherein adjusting a coating parameter comprises selecting an amount of film material to deposit (see col. 2, lines 30-34, and col. 17, line 45-col. 18, line 34);

[Re claim 11] coating the micromover component with a second self-aligned film; [Re claim 12] wherein the second self-aligned film comprises a different material from the first self-aligned film (see col. 6, lines 21-34).

[Re claims 13-15] Speakman fails to disclose expressly wherein one of the self-aligned films comprises a thermoplastic polymer and the other comprises a thermoset polymer; wherein the first self-aligned film and the second self-aligned film have different hardness; wherein the first self-aligned film and the second self-aligned film have different glass transition temperatures. However, these would have been obvious in light of Speakman, which discloses a large variety of materials. The choice of the two materials depends on the desired characteristics of a specific application.

[Re claim 18] Speakman discloses wherein the first self-aligned film is adapted for data storage, anti-wear, anti-reflective, desiccant or an anti-stiction (see col. 11, lines 1-44).

Therefore, it would have been obvious to use the teaching of Speakman and Arney et al to obtain the invention as specified in claims 1-8, 11-15, and 18.

**4. Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Speakman and Arney et al, as applied above, in view of Yao et al. (USPN 6617657, hereinafter "Yao").**

Speakman and Arney et al disclose substantially the limitations of claims 9-10, as shown above. The references also disclose treating a surface of the micromover component prior to coating and applying an adhesion promoter to the micromover component (see col. 18, line 47-col. 19, line 3) of Speakman.

But it fails to disclose expressly the use of plasma treatment.

However, the missing limitation is well known in the art because Yao discloses this feature (See col. 5, lines 1-15).

A person of ordinary skill is motivated to modify Speakman and Arney et al with Yao to obtain clean surfaces with better adhesive property by a clean and well-proven method.

Therefore, it would have been obvious to combine Speakman and Arney et al with Yao to obtain the invention as specified in claims 9-10.

**5. Claims 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Speakman and Arney et al, as applied above, in view of Jacobson et al. (USPN 6587408, hereinafter "Jacobson").**

Speakman and Arney et al disclose substantially the limitations of claims 16-17, as shown above.

But it fails to disclose expressly [Re claim 1 6] bonding a wafer having at least one contact probe or AFM tip opposite the self-aligned film; [Re claim 1 7] fabricating a contact atomic resolution storage device.

However, the missing limitations are well known in the art because Jacobson discloses these features (See Figs.3C-3F and col. 8, lines 5-23).

A person of ordinary skill is motivated to modify Speakman and Arney et al with Jacobson to obtain high-density data storage.

Therefore, it would have been obvious to combine Speakman and Arney et al with Jacobson to obtain the invention as specified in claims 16-17.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander G. Ghyka whose telephone number is (571) 272-1669. The examiner can normally be reached on Monday through Friday during general business hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lebentritt can be reached on (571) 272-1873. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

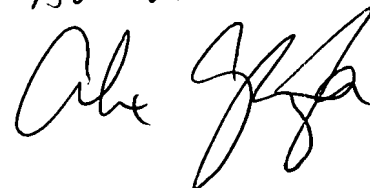
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AGG  
May 11, 2007

ALEXANDER GHYKA  
PRIMARY EXAMINER

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A handwritten signature in black ink, appearing to read 'Alex Ghyska', written over the printed name and title.